

Effective Date Summer 2005-2006

Course Description

Prerequisite: Eligibility for MATH 1021. Credit will not be given for both this course and CHEM 1201. A course in the fundamentals of chemistry covering the basic topics of general, inorganic and nuclear chemistry.

Course Objectives

Students will:

1. Understand the fundamentals of chemistry as presented in the topical outline.
2. Develop critical thinking and problem solving skills.

Procedures to Evaluate these Objectives

1. In-class problems after concept presentation
2. In-class exams
3. Cumulative final exam

Use of Results of Evaluation to Improve the Course

1. Student responses to in-class problems will be used to immediately help clarify any misunderstandings and to later adjust the appropriate course material.
2. All exams will be graded and examined to determine areas of teaching which could use improvement.
3. All evaluation methods will be used to determine the efficacy of the material presentation.

Detailed Topical Outline

1. An introduction to general chemistry
 - a. The scientific method and its applications
 - i. The steps of the scientific method
 - ii. Theories and Laws
 - b. The metric system and unit conversion
 - i. Making and interpreting measurements
 - ii. Dimensional Analysis
 - iii. Significant figures
2. An introduction to inorganic chemistry
 - a. States of matter
 - i. Solid, liquids and gases
 - ii. Laws of matter
 - b. Atomic Structure
 - i. The atom

- ii. The periodic table
- iii. Chemical reactivity

- c. Compounds and molecules
 - i. Elements
 - ii. Forming and naming compounds
 - d. Chemical reactions
 - i. The mole
 - ii. Balancing and stoichiometry
 - iii. Types of chemical reactions
 - e. Gas behavior
 - i. The combined gas law
 - ii. The ideal gas law
 - f. Chemical bonding
 - i. Ionic bonding
 - ii. Covalent bonding
 - iii. Lewis dot structure
 - g. Chemistry of liquids and solids
 - h. Solution chemistry
 - i. Acids and bases
 - i. Definition of an acid and base
 - ii. pH scale
 - j. Equilibrium
3. An introduction to nuclear chemistry
- a. Types of particles
 - b. Nuclear decay